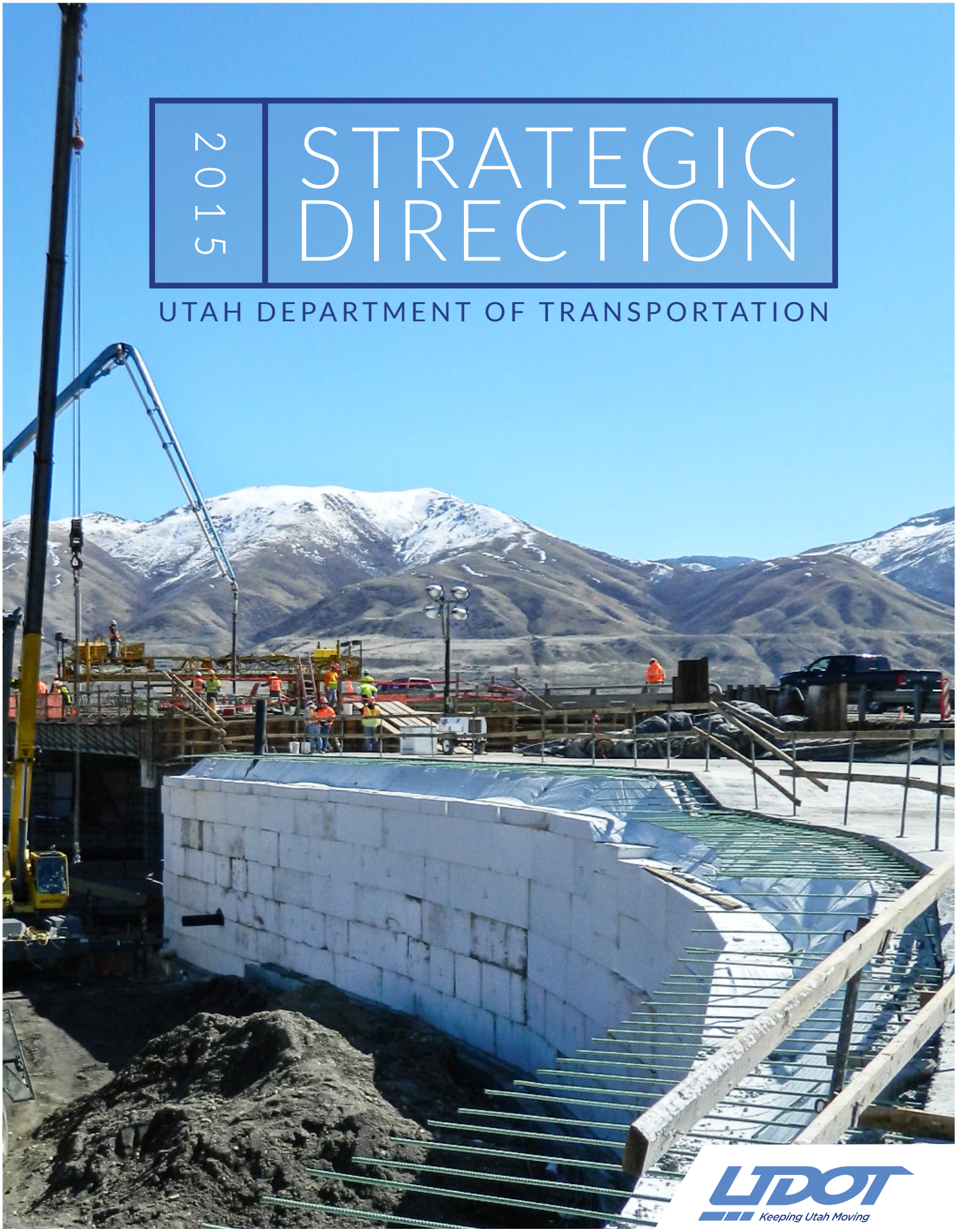
2015

STRATEGIC DIRECTION

UTAH DEPARTMENT OF TRANSPORTATION



UDOT Keeping Utah Moving

udot.utah.gov/go/strategicdirection

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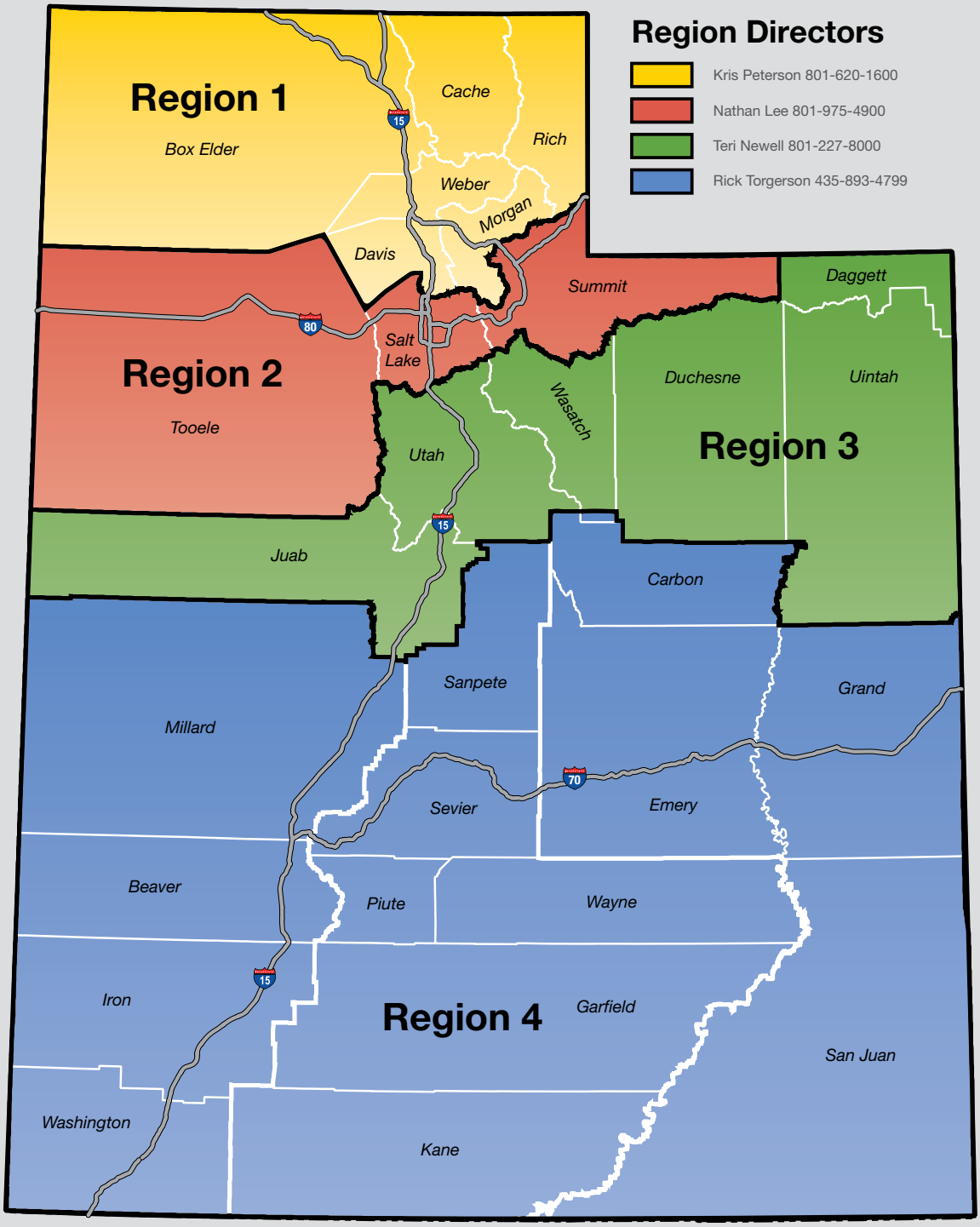
UDOT REGIONS



UDOT: KEEPING UTAH MOVING

CARLOS BRACERAS
Executive Director

As the demands on Utah's transportation system continue to grow, UDOT has a simple vision: Keep Utah Moving. This requires resourcefulness and original thinking, and we are up to the challenge. By creating integrated and innovative transportation solutions focused on the strategic goals outlined in this document, we aim to accomplish our mission to improve quality of life and strengthen Utah's economy. From improving roads and traffic lights to making connections with more travel choices like bike lanes and public transit, we're confident that improving Utah's transportation system improves Utah.

VISION

KEEPING UTAH MOVING

MISSION

INNOVATING TRANSPORTATION SOLUTIONS THAT STRENGTHEN UTAH'S ECONOMY AND ENHANCE QUALITY OF LIFE

EMPHASIS AREAS

UDOT must do the right work in the right way to achieve our goals and support the Governor's cornerstones. We will emphasize the following areas in all of the Department's efforts:

- Integrated Transportation
- Collaboration
- Education
- Transparency
- Quality

VALUES

These standards represent the core values of UDOT employees when making day-to-day decisions.

- Integrity
- Innovation
- Dedication
- Passion
- Public Responsiveness
- Fiscal Responsibility

GOAL: ZERO CRASHES, INJURIES AND FATALITIES

UDOT is committed to safety, and we won't rest until we achieve zero crashes, zero injuries and zero fatalities.

STRATEGIES

- Engineering
  - Every UDOT Project incorporates safety improvements. In 2013, UDOT programmed $29 million for specific safety projects.
  - UDOT's focus on safety within engineering begins with planning, designing and building safe roadways.
  - Engineering for safety is UDOT's commitment to a safe-system approach.
  - UDOT engineers use design principals that have been proven to be safe and reliable.
- Education
  - UDOT demonstrates its commitment to safety through outreach efforts that help educate the public and make Utah a safe place to live, travel and do business.
- Employee and Partner Safety

ENGINEERING

Key UDOT Traffic Safety Programs include:

Highway Safety Improvement Program (HSIP)

This federally funded program of safety improvement projects, activities and plans is carried out as part of the Utah Strategic Highway Safety Plan and is focused on improving highway safety on all public roads.

Spot Safety Improvement Program (SSIP)

This state funded program of infrastructure safety projects is focused on addressing highway safety issues in small, localized areas on state roadways.

Signal Program

This state funded program provides for the design and construction of traffic signals where traffic engineering studies of existing conditions have warranted the use of signal devices for safe and efficient movement of traffic through an intersection.

Railroad Safety Program

This federally funded program focuses on reducing crashes associated with railroad crossing facilities and roadways by providing or enhancing traffic control devices or improving the interaction of vehicles and trains at crossings.

Traffic Signal Program

This program includes a number of safety features such as advance radar detection on high speed corridors, which detects vehicle speeds and can extend a green light if a speeding vehicle is approaching. Real-time performance measures allow UDOT to identify problems with signal timing and equipment, minimizing congestion and stops.

Safe Sidewalk Program

The Safe Sidewalks Program provides a legislative funding source for construction of new sidewalks adjacent to state routes where sidewalks do not currently exist and where major construction or reconstruction of the route, at that location, is not planned for ten or more years.

Before sidewalk installation

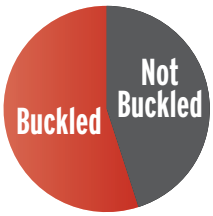
After sidewalk installation

ZERO FATALITIES EDUCATION PROGRAM

zero Fatalities
A Goal We Can All Live With

Zero Fatalities (ut.zerofatalities.com)

- As a member of the Utah Safety Leadership Committee, UDOT is taking a comprehensive, coordinated approach to improving traffic safety.
- Independent surveys show that more than 73 percent of adults in Utah are aware of the Zero Fatalities program. More than half (56 percent) of those who are aware of Zero Fatalities say the program has influenced them to avoid the top behaviors killing people on the roads.



Over the last five years, 45 percent of motorist fatalities were unbuckled.

Don't Drive Stupid (dontdrivestupid.com)

- Don't Drive Stupid is Utah's teen driving safety program and has created partnerships with more than a dozen organizations throughout the state.
- Nearly 20,000 parents and students were reached through Don't Drive Stupid presentations and outreach programs last year.
- Don't Drive Stupid representatives are helping parents prepare their teens for driving.
- Driver education instructors ask Don't Drive Stupid representatives to speak to parents and teens about the top behaviors killing people on Utah's roads, the graduated driver license laws and other safe driving messages.

Student Neighborhood Access Program (SNAP) (udot.utah.gov/snap)

- SNAP is a fun and comprehensive program for walking and biking safely to school that engages and educates students, parents, school administrators, crossing guards and communities.
- As part of the federal Safe Routes to Schools program administered by UDOT, SNAP's first priority is student safety, with the goal to help make the roads around schools safer.

Truck Smart (udot.utah.gov/trucksmart)

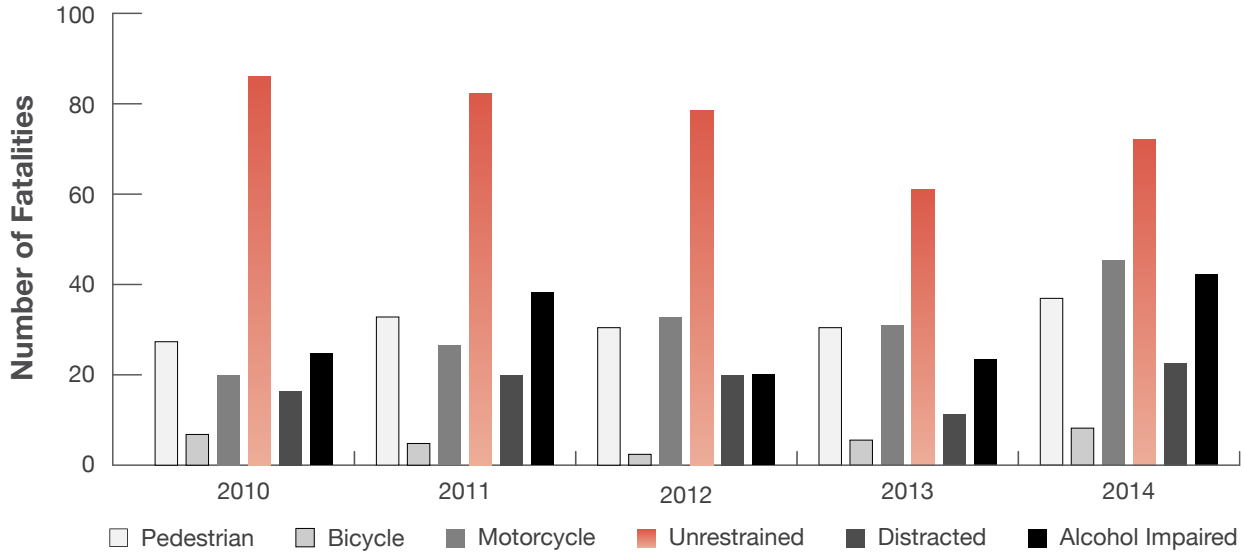
- The Truck Smart program educates new drivers on the importance of safely driving around semi-trucks, emphasizing the four deadly driving behaviors around big trucks.
- The program has reached more than 3,000 students this year, with more than 110 presentations at various high schools throughout Utah.

EMPLOYEE AND PARTNER SAFETY

Behavior Based Safety (BBS) is an innovative program which focuses on human behavior to minimize injuries, prevent fatalities and decrease the costs associated with safety incidents. More than 90 percent of all injuries are due, in part, to at-risk behaviors and BBS targets these behaviors. With BBS, employees observe each other on the job and provide safety feedback to reinforce safe work practices and correct risky ones. Behavioral data is then tracked and trended for BBS teams to make improvements. In combination with the safety culture assessment, BBS improves safety culture, safety systems and safety communication. The end result is a more open, positive safety culture and fewer safety incidents.

PERFORMANCE MEASURES

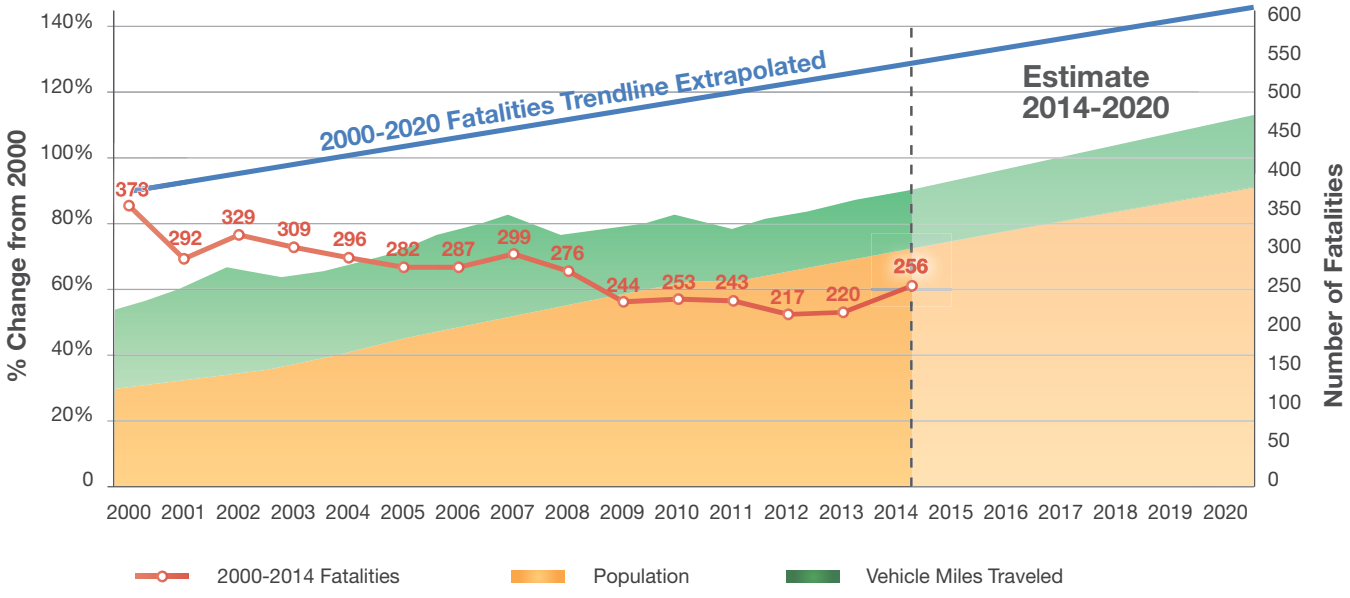
FATALITIES TYPE *(A FATALITY MAY APPEAR IN MULTIPLE CATEGORIES)*



**Fatality Analysis Reporting System (FARS) data*

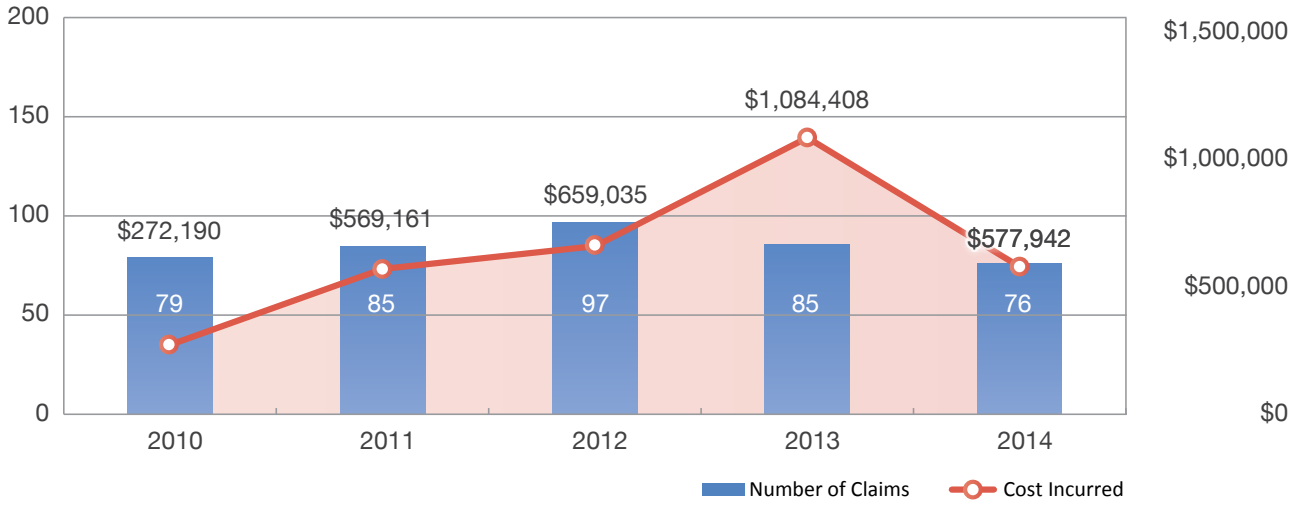
Year after year, the top contributing factor in fatal crashes is improper restraint. The number of people that could have been saved by wearing a seat belt represents 45 percent of Utah's roadway fatalities.

REDUCING HIGHWAY FATALITIES TO ZERO



While overall traffic fatalities are down 31 percent from the year 2000, that number has increased in the past two years.

5 YEAR UDOT WORKERS COMP NUMBER OF CLAIMS VS. COST INCURRED BY YEAR

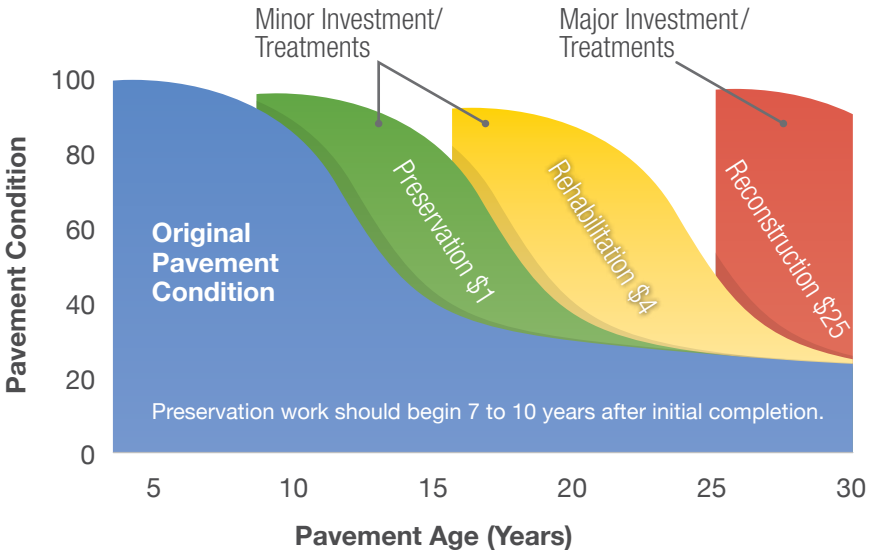


With the newly instated Behavior Based Safety Training, UDOT is optimistic that safety incidents and the costs associated with them will decrease.

GOAL: PRESERVE INFRASTRUCTURE

UDOT preserves Utah's existing infrastructure by scheduling regular maintenance and performing preservation treatments, in conjunction with rehabilitation and reconstruction. The most cost effective method to preserve Utah's investment in the transportation system is to schedule regular upkeep to prevent deterioration thereby providing the best value at the lowest life cycle cost. This preservation philosophy not only provides the best value for physical assets, it also provides additional safety benefits by ensuring that signs are well maintained, pavement striping is visible and pavement provides adequate friction.

EXTENDING PAVEMENT LIFE



PAVEMENT

STRATEGIES

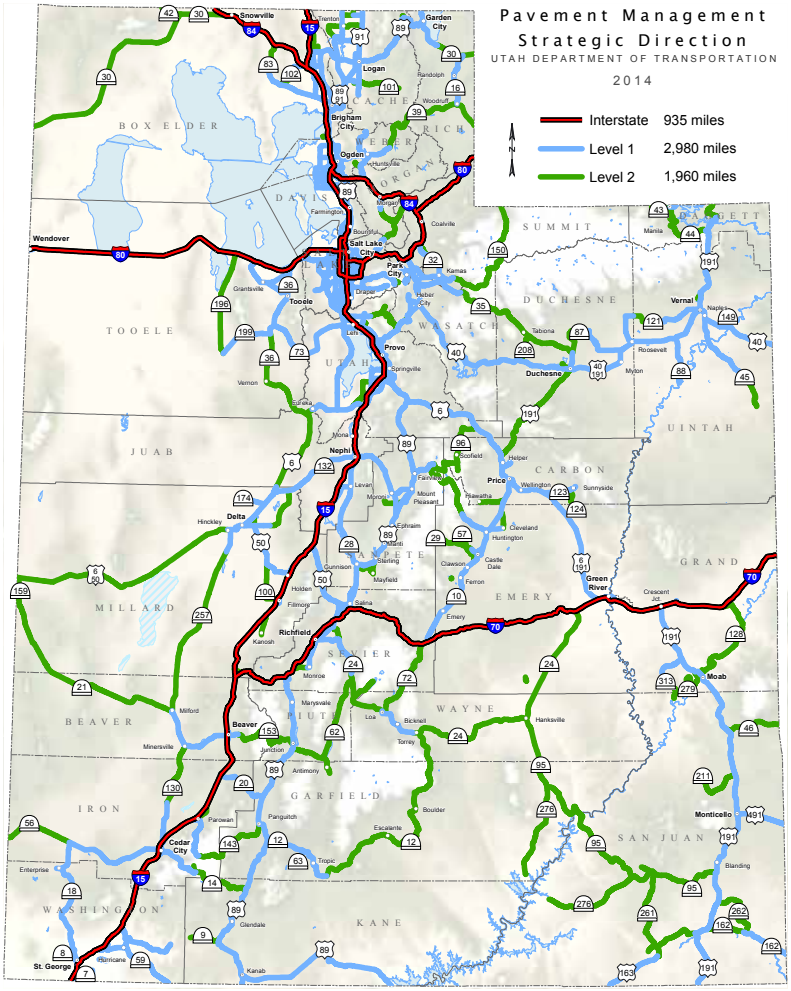
Pavement Management

The Department manages and preserves approximately 16,000 lane miles across the state from multi-lane urban concrete interstates to rural two-lane asphalt roads. The Department's pavement management philosophy is that good roads cost less, which means timely, cost-effective treatments minimize cost while achieving the greatest long-term benefit.

Pavement Optimization "A Plan for Every Section of Every Road"

The Department manages a total of 244 state highways. These highways are divided into 1,564 individual sections of varying length. Each individual section has its own history including when it was originally constructed, traffic volumes, type of facility (interstate, urban, rural), biannual distress surveys and when the next preservation is scheduled.

Pavement optimization, not a "worst-first" strategy, means the department selects the treatment that provides the greatest benefit at the lowest cost. A program of specific projects is recommended based on the available budget.



Interstate
Centerline Miles ~ 935, 16%
Lane Miles ~ 30%
VMT ~ 53%
Combo VMT ~ 62%

Level 1
>1,000 vehicles or 200 trucks per day
Centerline Miles ~ 2,980, 51%
Lane Miles ~ 51%
VMT ~ 45%
Combo VMT ~ 36%

Level 2
<1,000 vehicles or 200 trucks per day
Centerline Miles ~ 1,960, 33%
Lane Miles ~ 19%
VMT ~ 2%
Combo VMT, 2%

Total
Centerline Miles ~ 5,865
Lane Miles ~ 24,300
VMT ~ 47,712,150
Combo VMT ~ 5,726,3500

Pavement Condition Forecasting

UDOT uses distress surveys and modeling techniques to forecast pavement conditions. Forecasting is conducted and reported by type of facility (e.g., interstate, national highway system, urban, rural), material (e.g., concrete, asphalt), region and available budget.

Tiered Preservation

An annual expenditure of $220 million would be required to maintain the overall condition of the entire state highway system, providing the greatest benefit at the lowest cost. Funding has been limited to approximately $180 million per year during the past seven years. As a result, UDOT created a tiered system for classifying highways. The tiers are: interstates; Level 1 (Average Annual Daily Traffic (AADT) > 1,000 and truck volume > 200); and Level 2 (AADT < 1,000). Funding is sufficient to maintain interstate and Level 1 roads but not Level 2 roads.

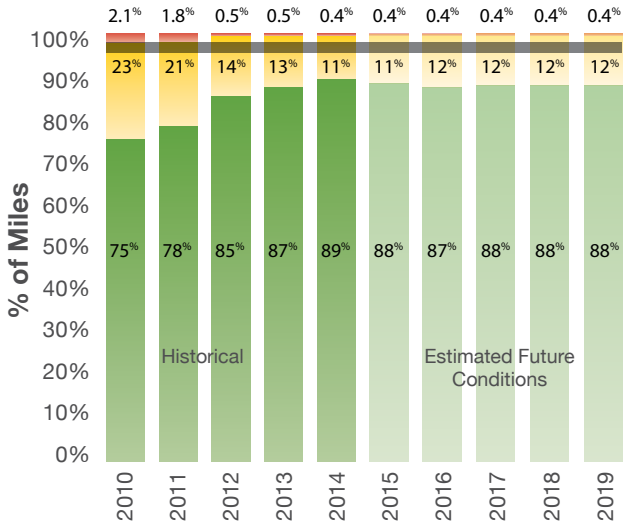
The tiered preservation strategy addressed the risk of trying to maintain all roads equally with limited funding, which would cause all highways to drop to a lower pavement standard. Over the course of the past seven years the department has continued with this tiered approach. Every year, UDOT collects automated pavement distress conditions for all roads, and data reveals that conditions for interstate and Level 1 roads were not only maintained but have steadily improved over initial targets. The Department will continue with this tiered system and adjust funding thresholds for Level 2 roads to provide the lowest pavement life cycle cost.

PERFORMANCE MEASURES

Interstate conditions continue to improve, while Level 1 and Level 2 conditions continue to trend slightly downward.

INTERSTATE CONDITION (935 MILES)

Ride quality forecast with $60 million/yr

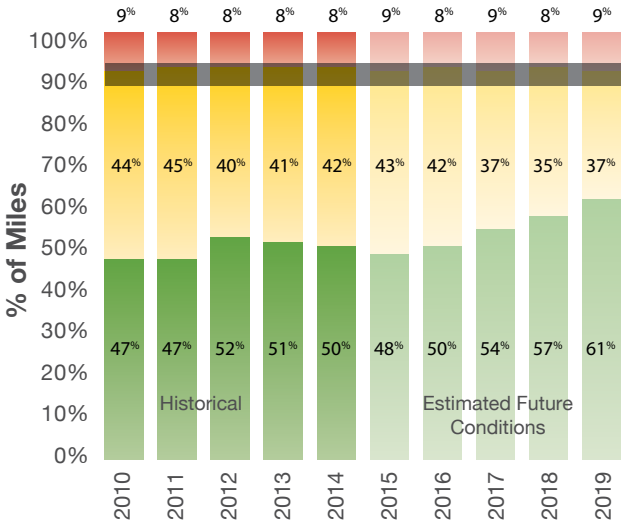


Interstate Condition

For the Interstate System, the Department model continues to forecast an upward trend for the overall pavement condition based on current funding.

LEVEL 1 SYSTEM CONDITION (2,970 MILES)

Ride quality forecast with $110 million/yr

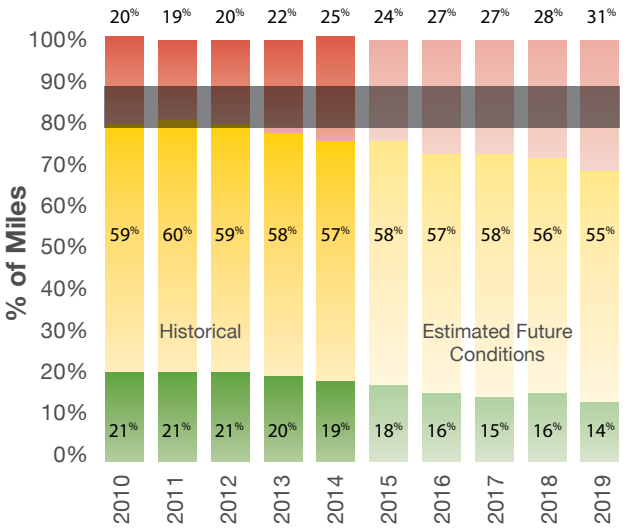


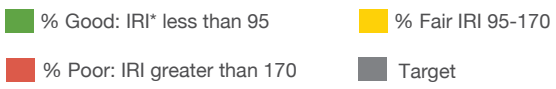
Level 1

For the Level 1 System, the Department model continues to forecast a relatively stable condition for the overall pavement condition based on current funding.

LEVEL 2 SYSTEM CONDITION (1,970 MILES)

Ride quality forecast with $10 million/yr





**International Roughness Index*

Level 2

Based on current funding, Level 2 road conditions will continue to deteriorate unless an extra $40 million a year is found to keep conditions as they are today.

BRIDGES

Bridge Preservation

- Bridge preservation activities, such as protecting bridge decks, extend the life of a bridge for a nominal cost.
- UDOT inspects not only the 1,867 state bridges, but all 3,717 bridges in Utah on a two-year cycle. The health of the bridge system is measured using condition ratings.

STRATEGIES

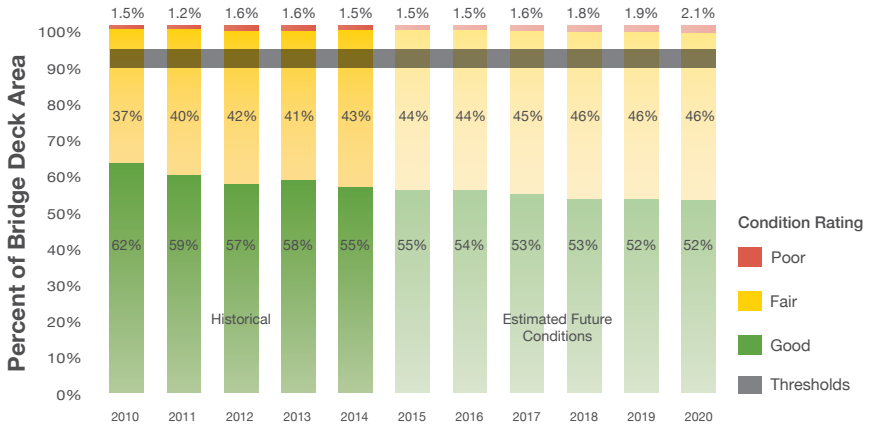
Bridge Strategy

To maintain this $4 billion asset, UDOT annually expends approximately $18.7 million on a combination of preservation, rehabilitation and reconstruction projects. All structurally deficient state-owned bridges are currently programmed for replacement or rehabilitation, but 17 percent of the state's bridges have exceeded their design life, a number that will increase to 30 percent in the next decade. Efforts are being focused on preserving new structures to extend the design life and rehabilitation structures in fair condition to extend the service life and delay cost replacements.

PERFORMANCE MEASURES

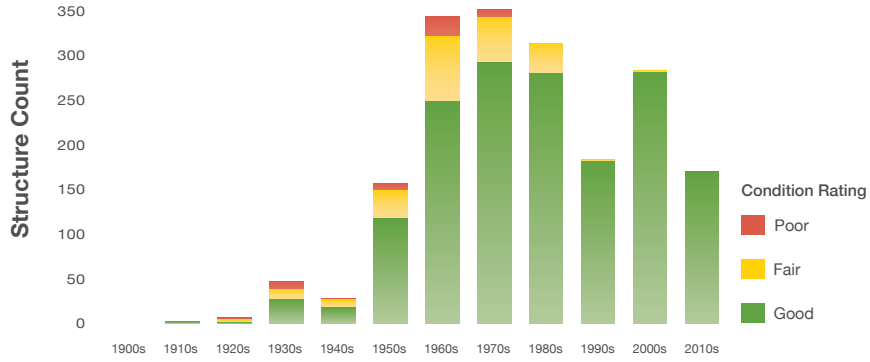
National Highway System (NHS), State Owned Non-NHS, and Locally Owned Federal Aid Structure conditions continue to show a slight downward trend.

CONDITION OF UDOT BRIDGES



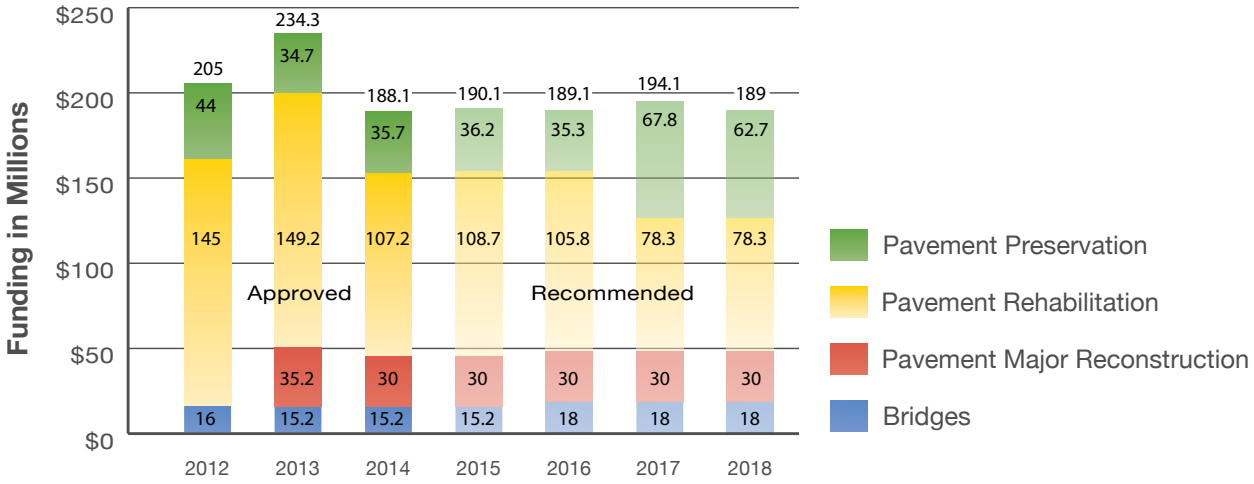
Condition of State Bridges
The Department model continues to forecast a slight downward trend for the bridge deck condition based on current funding.

AGE DISTRIBUTION OF STATE BRIDGES



Age Distribution of State Bridges
The Department's bridges 40 to 60 years old are a challenge to maintain and will eventually require replacement while bridges less than 40 years old require an active preservation program.

PAVEMENT AND BRIDGE EXPENDITURES



MAINTENANCE

STRATEGIES

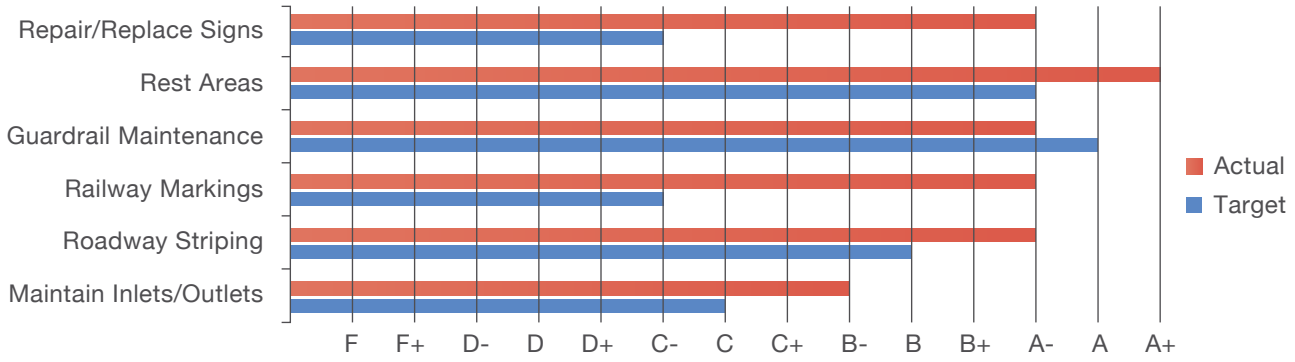
The UDOT Maintenance Division is always looking for ways to be more proactive in approaching maintenance activities. In 2014, UDOT programmed $126 million in maintenance work. Work is typically broken down into two categories, routine and reactive maintenance.

- Routine maintenance is work that can be planned based on trends and asset conditions. A few examples include: invasive weed spraying, mowing, sweeping and paint striping.
- Reactive maintenance activities are difficult to plan for but require quick response from maintenance crews. Some examples of these activities are: pothole patching, guardrail repair, attenuator repair and crash cleanup.

PERFORMANCE MEASURE

The Central Maintenance Division's Maintenance Management Quality Assurance (MMQA) program is used to identify performance of 19 specific state highway assets. These assets include pavement striping, litter and drainage features, as well as operational performance items such as snow and ice removal. These measures help the UDOT Maintenance Division identify their respective performance based on the current funding levels provided. The graph on the next page represents some of our key measures for the 2014 fiscal year.

MMQA SELECT KEY MEASUREMENTS

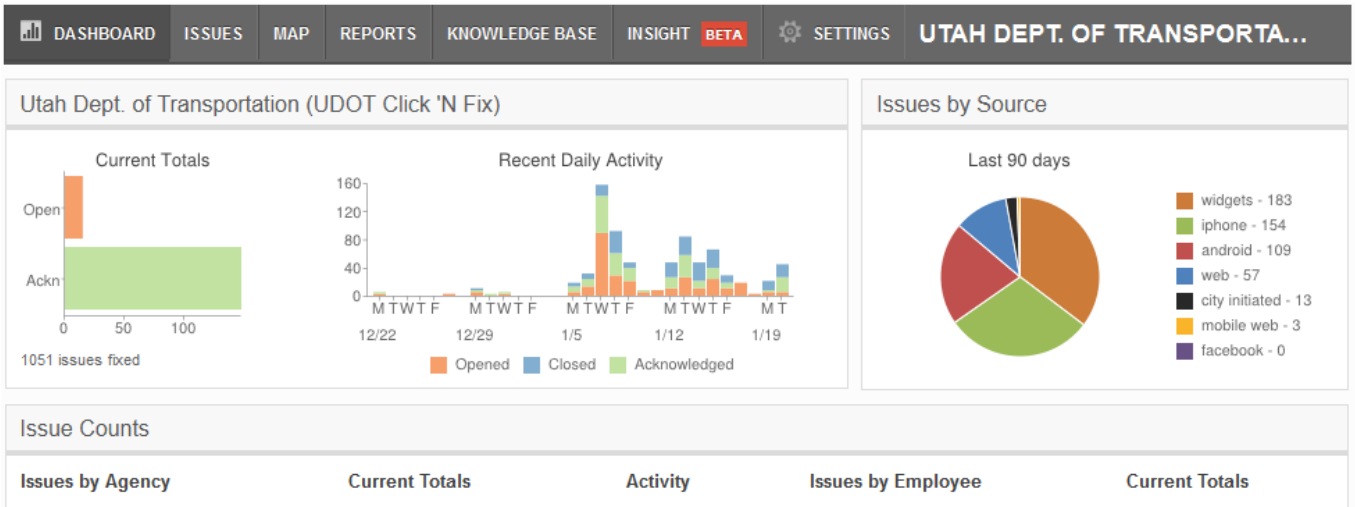


UDOT Click 'N Fix

UDOT Click 'N Fix allows citizens to submit maintenance issues to the Department using a smartphone application. Users place a marker on the map at the location of the issue and answer a few follow-up questions that will help UDOT crews understand exactly where to find the issue and what needs attention. The system also includes a backend monitoring dashboard that allows employees to track and respond to submissions (see below).

Once received, an issue is assigned to the correct regional office that will be able to take action. Regional employees acknowledge the issue and send a notification to the submitter. Once an issue is fixed the submitter receives another notification. The application also provides notifications to any other individuals who have commented on or followed the issue. This application streamlines communication between UDOT crews and Utah's citizens.

UDOT CLICK 'N FIX DASHBOARD



GOAL: OPTIMIZE MOBILITY

UDOT optimizes traffic mobility by adding roadway capacity and incorporating innovative design and traffic management strategies.

STRATEGIES

- Manage System: UDOT manages the transportation system through a number of programs including:
  - Traveler Information
  - Snow Removal
  - Incident Management
- Optimize System: UDOT strives to enhance and make the most out of our current system before adding capacity through the following programs:
  - Signal Optimization
  - Managed Lanes
  - Innovative Designs
  - Integrated Transportation
- Add Capacity: Since 2006, more than 900 miles have been added to the state system from various programs that fund more than 100 projects.

MANAGE SYSTEM

Traveler Information

- **Variable Message Signs (VMS):** UDOT has 162 VMS located on Utah interstates and state highways, telling travelers of expected travel times, upcoming construction, lane closures, crashes blocking their route or information ahead of a large weather event. UDOT also uses the VMS for a limited number of public safety campaigns including seat belt awareness, air quality initiatives and drunk driving enforcement.
- **UDOT Traffic Cameras:** Located throughout the state, UDOT traffic cameras provide real-time traffic views of current road conditions. These cameras help operators at the TOC know what's happening on the roads, are used by news stations to report traffic conditions and are readily available to the public at udottraffic.utah.gov. The cameras are also available on a UDOT Traffic media web portal. UDOT has more than 950 cameras in operation throughout the state.

- **Social Media:** UDOT uses Twitter, Facebook and YouTube to post information and updates on traffic conditions, changes in traffic flow, construction activities and weather conditions, as well as educational materials such as animations and tutorials.
- **UDOT Traffic:** This website and app provide access to information about traffic conditions, accidents, road construction activities, seasonal road closures, traffic cameras and VMS messages. The UDOT Traffic app has a push-alert feature, called the TravelWise Alert, to inform the traveling public of a major traffic issue. Travelers without an iPhone or Android device can check conditions at udottraffic.utah.gov.
- **UDOT's Citizen Reporter Program:** The UDOT Citizen Reporter program enlists trained volunteers to report on road and weather conditions on interstate and state highway routes throughout the state. The data provided by volunteers helps UDOT meteorologists fill in gaps where Road Weather Information System (RWIS) information is not currently available. The Citizen Reporter Program information helps keep road condition information more current and useful to travelers.

CITIZEN REPORTING
A UDOT Program

Snow Removal

- On average, Utah receives more than 25 winter storms each year and UDOT crews remove more than 65 million tons of snow and ice from Utah's roads.
- To help keep our roads clear, UDOT operates a fleet of approximately 500 snow plows around the clock.
- There are nine seasonally closed roads in Utah.

Crews clear the snow on I-15 southbound in Salt Lake City.

UDOT continues to make the snow and ice removal process more efficient by:

- Using equipment such as wing plows and tow plows that allow greater control and efficiency
- Applying brine before storms and using salt more efficiently
- Using technology such as Road Weather Information Systems (RWIS) and weather forecasting information to assess conditions and dispatch plows advantageously
- Evaluating road conditions within one hour of every storm event
- Saving more than 20,000 gallons of diesel fuel per year by training drivers using a snow plow simulator
- Prewetting the salt to start the melting process immediately, which saves the department 18,000 tons of salt annually

Incident Management

UDOT's Incident Management Program began in 1994 as part of UDOT's ongoing commitment to safety on Utah's roads. From the beginning, the program has provided significant benefits by increasing first responder safety, reducing congestion and delays and reducing secondary crashes.

OPTIMIZE SYSTEM

Signal Optimization

- Using advanced technologies such as cameras and traffic/weather sensors, operators at the UDOT Traffic Operations Center (TOC) can monitor traffic, detect problems and take actions necessary to return traffic flow to normal.
- The TOC is the key to providing a cost effective and efficient solution to help relieve congestion on Utah's roads and Highways.
- All traffic signal timing on all state roads is controlled centrally at the TOC.
- UDOT is among the first in the country to use real-time traffic signal performance metrics in optimizing traffic signal coordination.

Managed Lanes

The High-Occupancy Vehicle (HOV)/Express Lanes move more people per hour per lane than the general-purpose lanes.

Innovative Designs

- Flex Lanes at 5400 South accommodate heavy directional traffic by alternating the direction of the lanes during peak hours of the day. This significantly decreases traffic delay and requires less construction cost and fewer community impacts.
- Commuter Lanes on state Route 92 provide a direct connection to and from Interstate 15 that eliminates stopping at signals and reduces travel time.
- ThrU-Turn Intersections (TTIs) on 5400 South and 12300 South eliminate all left turns at the intersections to reduce delay.
- Diverging Diamond Interchanges (DDIs) have been built throughout the state to improve safety and mobility.
- Continuous Flow Intersections (CFIs) reduce congestion by moving vehicles more efficiently. UDOT has built 11 CFIs.

Integrated Transportation

- UDOT recognizes the importance of an integrated transportation system which includes bike lanes, paths and access to buses and trains.
- UDOT's Active Transportation Policy ensures that the needs of bicyclists, pedestrians and other active transportation users are routinely considered as an important aspect of funding, planning, design, construction, operation and maintenance of UDOT transportation facilities.
- UDOT's TravelWise program encourages alternatives to driving alone by promoting strategies such as carpooling, using transit, walking or biking, teleworking and skipping trips. Implementing TravelWise strategies helps reduce energy consumption, improve air quality and optimize mobility.

ADD CAPACITY

Currently, capacity projects are funded through the Transportation Investment Fund (TIF). Some of the projects started this past year include I-15 from state Route 73 to state Route 71 (known as The Point project); the state Route 154 (Bangerter Highway) and Redwood Road Interchange; I-15 South Davis Operational Upgrades; the Bluff Street Interchange at Red Hills Parkway; and the state Route 145, Pioneer Crossing Extension to S.R. 73.

PERFORMANCE MEASURES

Manage System

Traveler Information:

UDOT has estimated that the 102 large overhead VMS signs show information that can improve travel. These messages are used to change travel patterns by an estimated 280,000 drivers per year, saving $12.5 million in travel time. In addition to the delay savings, there are safety and air quality benefits.

When estimating the value of urban vs. rural VMS, rural shows a slightly higher value even though they aren't used as often. The events that rural signs respond to are rarer, but the potential benefits are larger because the detour routes are longer than in urban areas. Rural area delays also cost more per vehicle because the percentage of large commercial vehicles is higher.

Social media and mobile technology has proven to be beneficial in spreading the latest transportation news. Currently there are 280,327 UDOT Traffic app downloads and more than 30,000 UDOT Twitter followers.

Snow Removal:

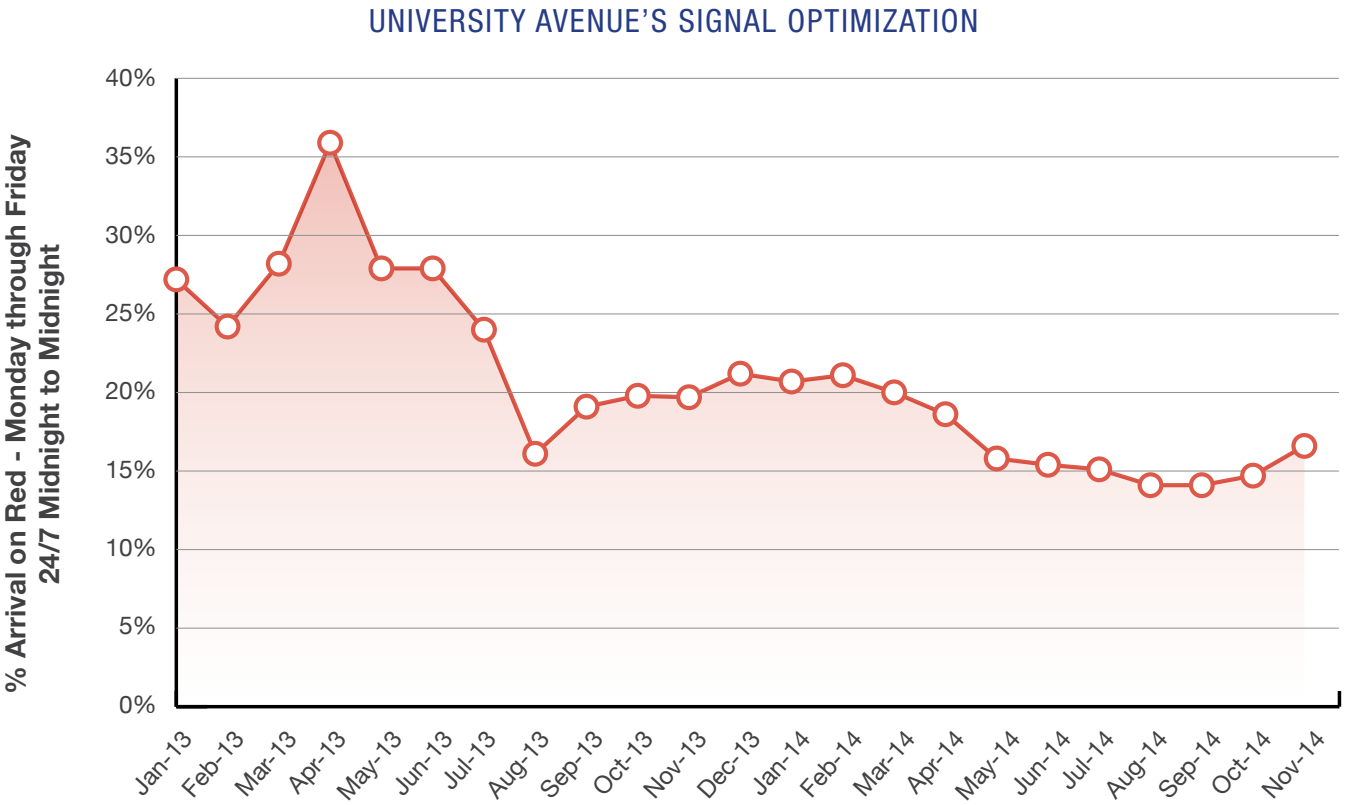
UDOT strives to keep roads clear and accessible during the snow season. In 2014, UDOT reached its goal of attaining an A- rating for removing snow and ice on state roads.

Incident Management:

With 12 Incident Management Team (IMT) trucks operating on Utah roadways, incident management drivers have assisted over 22,000 motorists in 2014. This number includes, incident assistance, debris removal, providing gallons of gas to motorists in need, assisting with flat tires and much more.

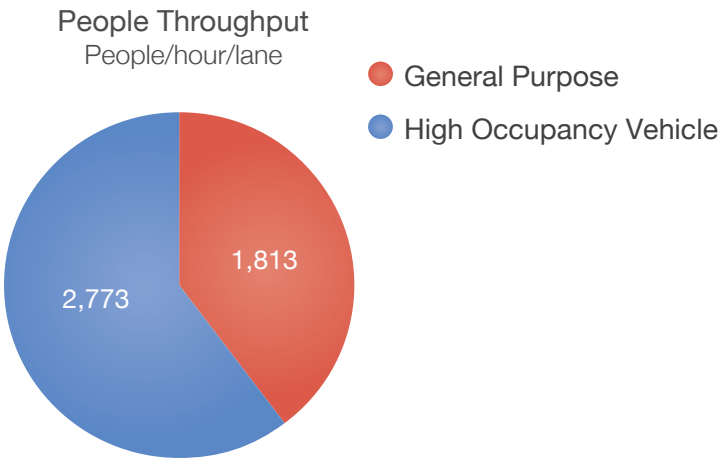
Optimize System

Signal Optimization:



This chart shows the average percent of vehicles arriving on red each month on University Avenue in Provo and Orem since January 2013. Traffic lights on this corridor were re-timed in Spring 2013 and Spring 2014. In both cases the impacts are very apparent. UDOT makes similar changes on other corridors statewide.

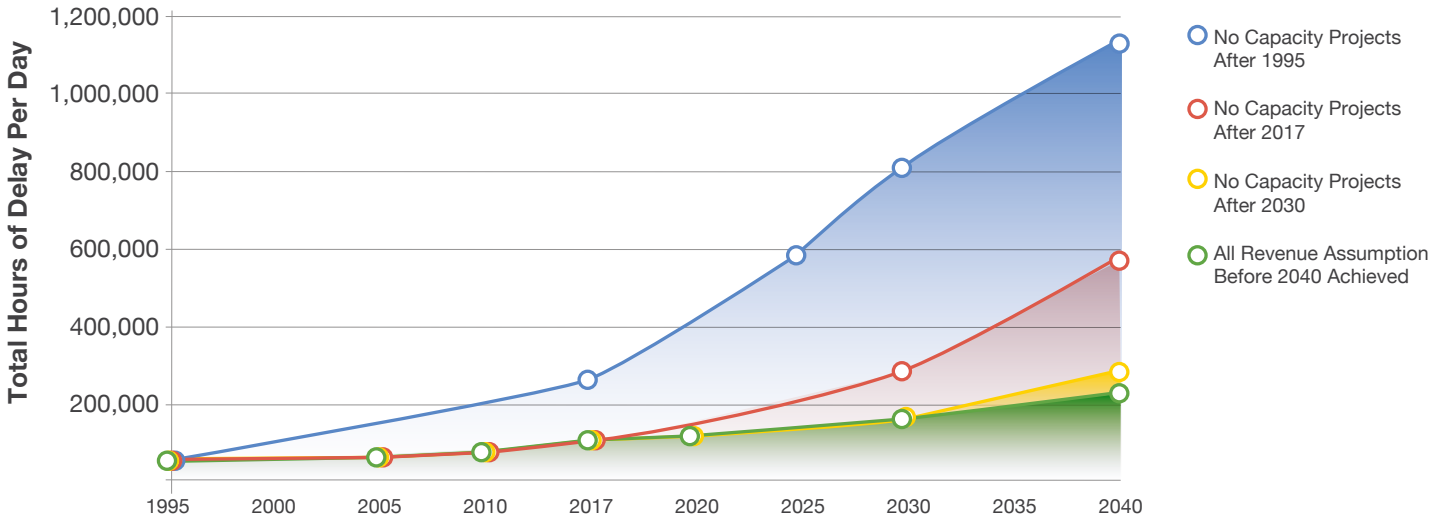
Managed Lanes:



The HOV/Express Lanes move more people per hour per lane than a general purpose lane and account for only 6.2 percent of crashes.

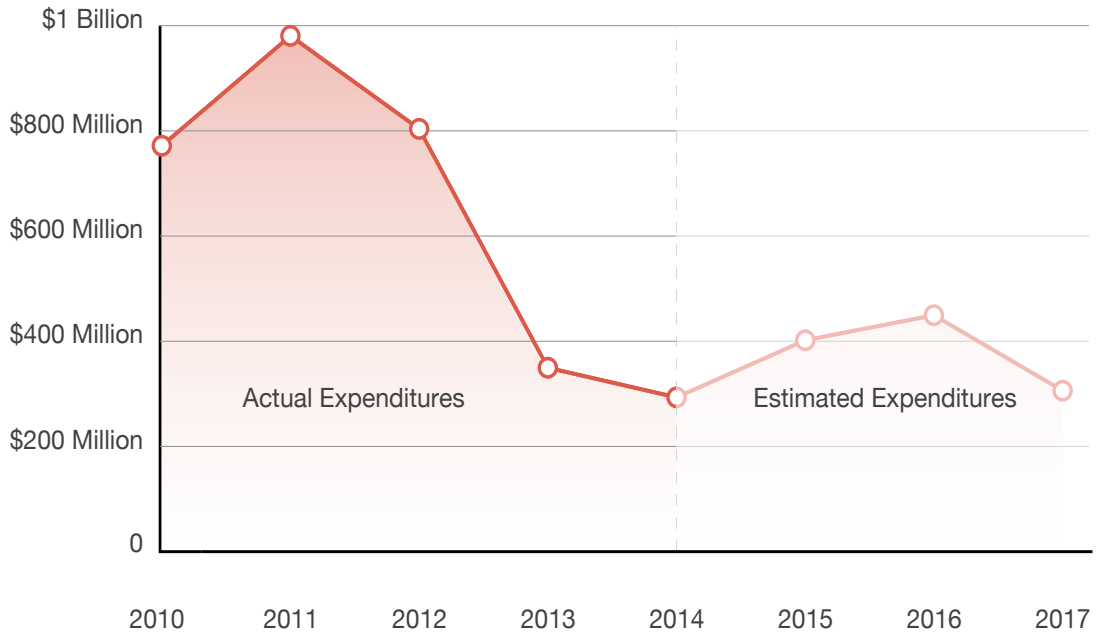
Add Capacity

DELAY ALONG THE WASATCH FRONT - DAVIS, WEBER, SALT LAKE & UTAH COUNTIES



Even with planned capacity projects, delay will increase after 2015. Mobility projects have made a difference in delay, however continual focus on mobility will need to be maintained in order to continue this trend.

TRANSPORTATION INVESTMENT FUND



The Transportation Investment Fund provides funding for major capacity projects such as the Utah County I-15 Corridor Expansion Project (I-15 CORE), the Mountain View Corridor Project and the I-15 South Davis Improvements Project.

DELIVERING RESULTS

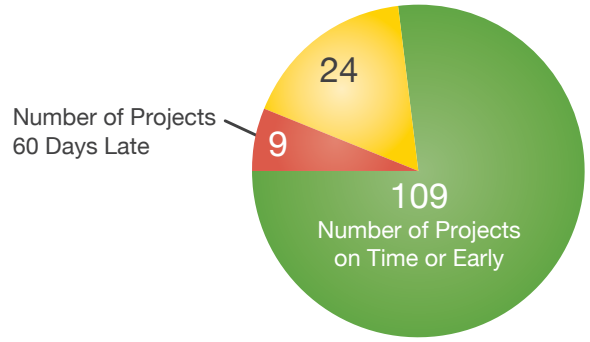
The Department's capital program is divided into two main parts: preconstruction and construction.

PRECONSTRUCTION

In 2014, the Department contracted for 22 preconstruction and environmental projects worth a total of more than $39 million.

Current Projects

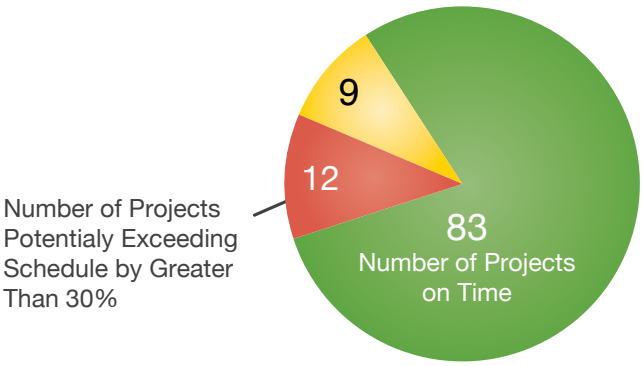
PRECONSTRUCTION SCHEDULE



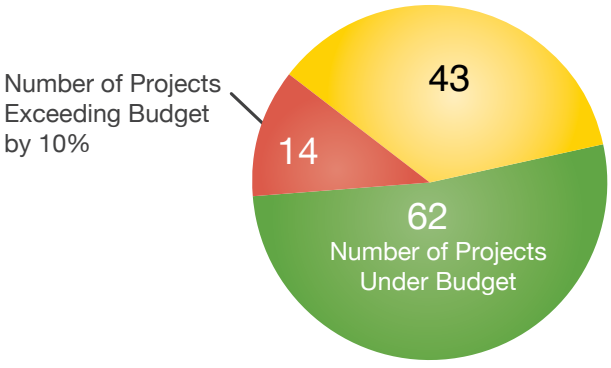
The goal for the preconstruction division is to have 85 percent of projects on schedule. Presently 77 percent of projects are on schedule.

CONSTRUCTION

CONSTRUCTION SCHEDULE



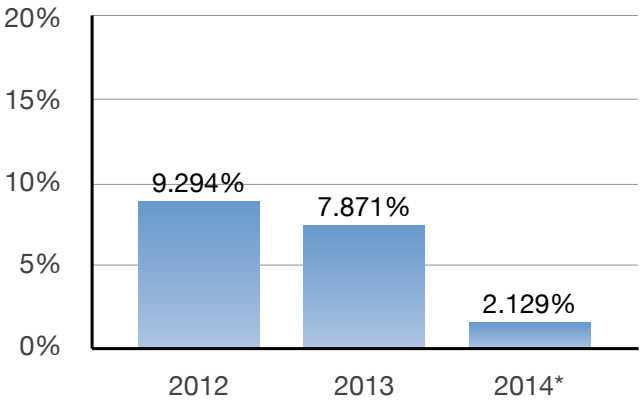
CONSTRUCTION BUDGET



The goal for the construction division is to have 75 percent of projects on schedule and 90 percent of projects on budget. Presently 80 percent of projects are on schedule and 52 percent of projects are under budget.

AVERAGE CONTRACT OVERRUN

Percent Over Original Amount

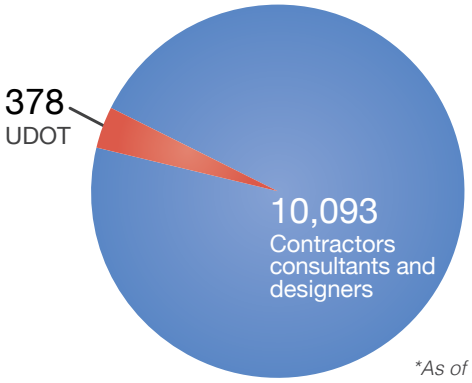


This graph shows the average contract overrun on UDOT construction projects by year and by quarter. These overruns are generally from quantity overages and contract change orders.

**As of Dec. 17, 2014*

UDOT leverages the private sector. Less than four percent of those working on UDOT construction projects are UDOT employees.

EMPLOYEES ASSOCIATED WITH UDOT CONSTRUCTION PROJECTS*



**As of Jan. 28, 2015*